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LEFT VENTRICULAR HYPERTRABECULATION IN AFRO-CARIBBEAN INDIVIDUALS: AN INHERITED CARDIOMYOPATHY OR A PHYSIOLOGICAL RESPONSE TO INCREASED CARDIAC PRELOAD

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Introduction: Studies in heart failure (HF) patients of Afro-Caribbean (black) origin reveal a high prevalence (up to 30%) of myocardial trabeculations and the potential diagnosis of left ventricular non-compaction (LVNC). It is unclear whether the myocardial morphology is representative of LVNC or whether it represents an ethnicity related epiphenomenon to increased cardiac preload. Pregnancy is associated with a marked increase in physiological cardiac preload. This study sought to investigate the impact of increased cardiac preload on left ventricular morphology in previously healthy black and Caucasian pregnant women.

Method: Between 2008 and 2010, 106 healthy pregnant females (90% Caucasian) underwent cardiac echocardiography in the third trimester. Echocardiograms were analysed for trabeculations defined as localised protrusions of the ventricular wall ≥3mm in thickness associated with intertrabecuar recesses. The results were compared with 80 healthy non-pregnant females of similar age.

Results: Pregnant black females demonstrated a higher prevalence of left ventricular hypertrabeculation (LV HTC) compared with Caucasian females (n=5; 45.5% vs n=12; 12.6%; p 0.014). Pregnant black females were 34% more likely to have LV HTC compared with Caucasian females. In contrast none of the non-pregnant females of either ethnicity exhibited any evidence of LV HTC. None of the black or Caucasian pregnant females with LV HTC showed objective features of left ventricular systolic or diastolic dysfunction. The mean EF by Simpsons method was 56.8 ± 12% v 58 ± 9.8%; p=0.792. The E/A ratio was 1.47 ± 0.33 v 1.30 ± 0.44; p: 0.218.

Conclusion: Black pregnant females exhibited a significantly higher frequency of LV HTC compared with pregnant Caucasian females with similar BP in the absence of abnormal systolic or diastolic function. Based on these results, it is highly likely that increased cardiac preload in HF is associated with an ethnically mediated myocardial response comprising of an increased number of trabeculations in black individuals and should be regarded as an epiphenomenon rather than LVNCC outside the context of familial HF. The hypothesis requires prospective longitudinal evaluation.